



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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June 18, 2008

Engineering Field Activity, Midwest
Attn: Mr. Howard Hickey
Building 1A, Code 931
201 Decatur Avenue
Great Lakes, Illinois 60088-5600

Re: Draft Sampling and Analysis Plan for the
Remedial Investigation/Risk Assessment
Site 19 - Small Arms Range 910, Naval
Station Great Lakes, Great Lakes, Illinois

0971255048 - Lake
Great Lakes Naval Station
Superfund/Technical

Dear Mr. Hickey:

The Illinois Environmental Protection Agency (Illinois EPA or Agency) is in receipt of the Navy's Draft Sampling and Analysis Plan for the Remedial Investigation/Risk Assessment Site 19 - Small Arms Range 910, Naval Station Great Lakes, Great Lakes, Illinois. The Sampling and Analysis Plan (SAP) was drafted by Tetra Tech NUS, Inc. on behalf of the Naval Facilities Engineering Command Midwest (Navy). It was dated April 2008 and was received at the Agency on April 21, 2008. The SAP constitutes the Navy's planning document, addressing specific protocols for sample collection, sampling handling and storage, chain-of-custody, laboratory and field analysis, data validation, and data reporting. The SAP was generated for and complies with applicable U.S. Navy, Illinois EPA, and United States EPA Region 5 requirements, regulations, guidance, and technical standards, especially USEPA (1999) and Department of Defense and Department of Energy guidance for preparing Uniform Federal Policy for Quality Assurance Project Plans. The Agency has conducted a review of the Draft SAP and is herein providing comments generated during that review.

- 1) **Entire Document** - The upper right-hand corner of each page identifies this document as the "Remedial Investigation/Risk Assessment". It would be more accurately identified as the "Sampling and Analysis Plan".
- 2) **Page 5, Acronyms** - The definition for ASTM should be American Society for Testing and Materials.
- 3) **SAP Worksheet #3 and #9** - My Title/Role should be listed as Remedial Project Manager.

- 4) **SAP Worksheet #11, page 18** – The DQO process begins with step 2. For completeness, Step 1 should be included if only to say it is irrelevant or unnecessary.
- 5) **SAP Worksheet #11, page 18** – Step 3 states that a screening-level assessment will be conducted. Details should be provided including goals, equipment calibration, whether quantitative results will be recorded, frequency of laboratory confirmation samples for the field instruments, and sampling pattern and number.
- 6) **SAP Worksheet #11, page 19** – The second bullet item at the top of the page states the groundwater will only be investigated to a depth of 25 feet below ground surface and will target the top of the aquifer. What if the aquifer extends below 25 feet? The entire aquifer depth should be determined, not just the top or merely to 25 feet. Additionally, since at least some of the potential contaminants are dense non-aqueous phase liquids (DNAPLs) such as the chlorinated volatile organic compounds and would be considered “sinkers”, the bottom of the aquifer should not be ignored.
- 7) **SAP Worksheet #11, page 19** – The third bullet item at the top of the page states the site perimeter will be the horizontal boundary for this study. It may be the initial horizontal boundary for this study, but depending on the collected data results, contamination could lead off-site and require extending the investigation beyond the initial boundary. This should be stated as well.
- 8) **SAP Worksheet #11, page 19** – The first paragraph in Step 5 identifies Region 9 and Illinois risk-based criteria as the bases for the preliminary action levels. Region 9 preliminary remediation goals have not been updated for several years and are obsolete. Screening values for Regions 3, 6, and 9 are in the process of being consolidated into contractor-maintained Regional Screening Levels for Chemical Contaminants at Superfund Sites tables. A beta version is available at the following internet address: <http://epa-prgs.ornl.gov/chemicals/index.shtml>. Future screening proposals should utilize updated screening values and, although draft, revised values should be considered for Site 19.
- 9) **SAP Worksheet #11, page 19** – In the last paragraph of Step 5, there is discussion regarding the nature and extent “within the site perimeter.” Determination of nature and extent cannot be bounded prior to the investigation. The analytical results of the investigation will determine where the nature and extent of contamination lies. It may or may not be within the site perimeter.
- 10) **SAP Worksheet #11, page 19** – In the last paragraph of Step 5, the discussion regarding the use of spatial patterns for decision making and factors to be considered is confusing. Please clarify what is being stated here. It appears to be laying the

groundwork for not conducting a complete investigation, but only conducting field work within the already determined boundary of the site, regardless of what the data might show. That would not be acceptable. In order to properly determine nature and extent, any contamination identified would need to be further investigated until analytical results have been obtained that reveal the entire horizontal and vertical extent of contamination above the agreed-upon screening levels.

- 11) **SAP Worksheet #11, page 19** – In the last paragraph on page 19, under Step 6, it is stated that “the manner of release (i.e., aerial deposition) suggests that lead concentrations will be widely scattered and therefore will not be present in concentrations greater than the PAL.” Although this statement sounds logical, it is merely an assumption. According to an electronic mail message from Mr. Bryan Holtrop, dated 6/11/2001, regarding a soil pile created on this site in 2001, “However, we did collect some samples of in-situ soil on the site. Of that sampling we got two samples that came back with total lead levels of 2120 mg/kg and 444 mg/kg, and SPLP lead levels of 0.122 mg/l and 0.236 mg/l”. At other Navy sites similar to this one, the lead contamination was not as heterogeneous as first thought and there was a large area determined to be above the PAL that required a removal action. Suggest not making such a statement here.
- 12) **SAP Worksheet #11, page 20** – In the fifth paragraph, statistical error rates are set. By convention for risk assessment purposes, false rejection and acceptance rates are typically given as 5 and 10% (or 10 and 5%, in this case), respectively. Relaxed standards for this site should be fully justified. Additionally, in the last sentence of this paragraph, the type two error has been redefined and should be identified as “alpha”.
- 13) **SAP Worksheet #11, page 20** – In the middle of the page, the Project Action Level (PAL) for lead is listed as 400 mg/Kg (ppm). For the soil ingestion and inhalation exposure routes that is the readily accepted screening value. However, for the soil component of the groundwater ingestion exposure route, the Illinois EPA Tiered Approach to Corrective Action Objectives (TACO) screening level is 0.0075 mg/L. This value is calculated using the TCLP or SPLP testing methods. Alternatively, if pH data for each sample or borehole will be collected, the pH-specific soil remediation objective may be used. By defaulting to the 400 ppm value, the soil component of the groundwater ingestion exposure route is not addressed. This is normally unacceptable. However, when used strictly for the purpose of calculating the required number of samples to collect at this site, as it is here, that value is allowable.
- 14) **SAP Worksheet #11, page 20** – Please explain where the values of 600 mg/kg, for the maximum expected value, and 6, for the possible range of concentrations, were obtained and provide justification for their use. As noted above, prior sampling yielded at least one result above the 600 mg/kg value listed here.

- 15) **SAP Worksheet #11, page 21** – Under Step 7, the surface soil is defined as 0-2 feet below ground surface. Normally, a 0 to 2-6 inch depth is considered the surface soil. However, since following the demolition of Building 910 an additional 12 inches of topsoil was reportedly placed over portions or the entire site, the added depth is considered acceptable in this instance. Based upon the Field Operations Leader's best judgment, though, if an area of the site can be determined to be not impacted by the additional 12 inches of topsoil, the sample should be collected from the 0 to 2-6 inch depth rather than 0-2 feet. Likewise, if the opposite is true and it can be confidently determined that the top 12 inches was placed post demolition, the sample should be collected from the 12 to 14-18 inch depth rather than 0-2 feet. This should be clearly stated in this section. Also, the subsurface depth should extend from the surface soil interval to the lower extent of contamination or groundwater. Depending on the field screening results, it may be necessary to identify shallow and deep subsurface intervals.
- 16) **SAP Worksheet #11, page 21** – The second paragraph states that, based on FOL judgment, additional borings may be drilled and up to 10 additional samples may be collected. Upon what information will the FOL base his judgment? Please provide this information or at least a few examples of possible reasons for collecting those additional samples.
- 17) **SAP Worksheet #11, page 21** – The second paragraph discusses field screening results. How will those results be documented? Will they be used for comparison to laboratory results for those samples that are sent to the lab? Please explain.
- 18) **SAP Worksheet #15.1** – For any compound that the laboratory reporting limit does not achieve the Project Action Level, the analytical result must be reported down to the method detection level, regardless of the reporting level. There should be a note added to clearly state this.
- 19) **SAP Worksheet #15.1** – The analytes on this table are not listed in alphabetical order. This makes finding a specific compound or verifying the listed values difficult. Please consider reorganizing the analytes or explain why they are listed in this manner.
- 20) **SAP Worksheet #15.1** – Worksheet 15.1 lists screening values, for aqueous and solid matrices, from Illinois TACO and Region 9. A "spot-check" review of Worksheet 15.1 was performed. The Region 9 and TACO values should not be confined to the "Residential Soil" and "Industrial Soil" levels but should also include the "Migration to Groundwater" soil values, when available. In the case of 1, 3-dichloropropene, the minimum value should be reported as 0.2 µg/kg. Additionally, for the contaminant mercury, the minimum TACO solid matrix value should be corrected from 6400 µg/kg to 100 µg/kg, the value in TACO to protect construction workers from inhalation

exposure to elemental mercury. Also, the reported Region 9 minimum solid matrix value of 100 µg/kg could not be verified in the Region 9 October 2004 PRG tables. All entries on Worksheet 15.1 should be reviewed and corrected as needed.

- 21) **SAP Worksheet #15.1** – Worksheet 15.1 evaluates the adequacy of analytical methods to detect critical environmental concentrations of the contaminants. The subject worksheet compares screening values to the analytical method detection limit (MDL). The correct evaluation is to compare environmental concentrations to probable quantitation limits (PQL) or similar realistic values.
- 22) **SAP Worksheet #15.1** – Illinois EPA was unable to determine from where several of the Illinois TACO Criteria listed in this table were obtained. Please review the table for accuracy and revise where necessary.
- 23) **SAP Worksheet #15.1** – There are several instances for both soil and water where the PAL Reference identifies TACO or EPA R9 when it should identify the other, based upon using the most conservative value as the reference. Please review the table and revise as necessary.
- 24) **SAP Worksheet #15.1** – A solid matrix TACO criterion of 3,100 mg/kg is available for 4-methyl-2-pentanone (methyl isobutyl ketone) and should be included here.
- 25) **SAP Worksheet #15.2** – In the header for the third column (Project Action Limit), footnote #2 is referenced. The footnote explanation should be provided plus the absence of footnote #1 should be explained.
- 26) **SAP Worksheet #16** – The dates listed for the Draft and Final RI/RA Report appear to be reversed as the final report anticipated dates are before the draft anticipated dates.
- 27) **SAP Worksheet #17 and Figure 17-1** – Suggest placing sampling points near the northeast and southeast storm sewer collection points. It would be expected that contaminated surface soil may move toward these locations.
- 28) **SAP Worksheet #18** – See previous comment regarding the depth of surface soil samples.
- 29) **SAP Worksheet #18** – Field instrument confirmation samples should be included here.
- 30) **SAP Worksheet #18** – The note at the bottom of page 47 states that additional screening sampling locations may be collected, but appears to state that only the listed quantities in the table will be submitted for laboratory analysis. This is contrary to Step 7 of the DQO Process on page 21 where it states, “Based on FOL judgment, additional

borings may be drilled to better delineate site contamination, and up to 10 additional samples may be collected and analyzed for VOCs, PAHs, and metals." Illinois EPA believes the note on this worksheet should be changed to match Step 7.

- 31) **SAP Worksheet #18** – The note at the bottom of page 48 states that the monitoring wells will be stick up with protection using 3 pipes filled with concrete and painted yellow. Is this the best choice for this site? Wouldn't flush mounted wells be better suited? Please provide the justification for using stick up type wells here.
- 32) **SAP Worksheet #19** – The last line of the table lists a single 8 oz glass container for soil grain size, but the very next column lists sample volume as 84 oz. Obviously, this is a typo. Please review and revise as necessary.
- 33) **Appendix A** – In SOP Number SA-1-1 on page 19, the stabilization parameters for ground water include pH, specific conductance, temperature, turbidity, and dissolved oxygen. Illinois EPA believes oxidation-reduction potential (ORP) should also be included here.
- 34) **Appendix B** – In Section 1.2, the second listing of the telephone number for Howard Hickey appears to be incorrect.
- 35) **Appendix B** – In Section 4.0, shouldn't the photo ionization detector (PID) analysis be listed as one of the tasks to be performed?
- 36) **Appendix B** – In Section 6.1, polynuclear aromatic hydrocarbons (PAHs) should be identified as primary contaminants. They should also be included in Table 6-1.
- 37) **Appendix C** – In Section 1.2.1, the first bullet references the TACO remediation objectives. The additional chemicals included in the web-based tables titled "Chemicals not in TACO Tier I Tables" should also be used and referenced.
- 38) **Appendix C** – In Section 1.2.1, the third bullet includes a web link that would not work. Please provide an updated link. Suggest that the criteria developed from the third bullet source be included in Worksheet 15.1.
- 39) **Appendix C** – On page C-6, redefine surface soil as the 0 to 2-6 inch interval.
- 40) **Appendix C** – In Section 1.2.2, second paragraph, the lead in groundwater criterion should be revised to the Illinois groundwater standard of 7.5 µg/L.
- 41) **Appendix C** – All of the chemicals listed in Section 1.2.3 as examples where surrogate toxicity values might be used are included in the "Chemicals not in TACO Tier I

Tables" pages on the IEPA web site. The web table values should be utilized before surrogates are considered.


- 42) **Appendix C** – Section 2.3 should be revised to include the definition of the exposure point concentration (EPC) for the vapor intrusion route of exposure. We suggest the maximum soil and groundwater concentrations.
- 43) **Appendix C** – Disagree with the Section 2.4.1 bullet at the top of page C-18. All chemical-specific dermal absorption factors (AF) should be used for organic contaminants. This includes the AF of 0.13 for PAHs and 0.1 for all other semivolatiles.
- 44) **Appendix C** – In the second paragraph on page C-28, correct the lead in groundwater criterion to the Illinois groundwater standard of 7.5 µg/L.
- 45) **Appendix C** – In Table 2, for all receptors, revise the outdoor inhalation exposure route to read, "Inhalation of Vapor/Dust (from soil)".
- 46) **Appendix C** – At the bottom of Table 3, please add definitions for the second column of abbreviations.
- 47) **Appendix C** – On Tables 3 and 4, correct the Occupational Worker EF values to 250 and 219 days/year, respectively, explain the derivation of the Construction Worker PEF value, and correct the units for the exposure parameter "t*" to "(hours)".

If you have any questions regarding anything in this letter or require any additional information, please contact me at (217) 557-8155 or by electronic mail at brian.conrath@illinois.gov.

Sincerely,

Brian A. Conrath

Brian A. Conrath
Remedial Project Manager
Federal Facilities Unit
Federal Site Remediation Section
Bureau of Land

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cc: Bob Davis, Tetra Tech NUS, Inc.
Owen Thompson, USEPA (SR-6J)